

Claim(s)

1. A method of fabricating an electronic assembly, comprising:
forming a mound of solder on each of at least a pair of electrical
contacts on a substrate so as to form at least a pair of solder mounds;
5 applying a noflow resin encapsulant containing a flux material between
said at least a pair of solder mounds so that said encapsulant partially covers
said solder mounds;
pressing a passive SMD having at least a pair of electrical contacts into
said resin encapsulant so that the said at least a pair of electrical contacts of
10 said passive SMD respectively make contact with the said at least a pair of
solder mounds; and
applying heat to said substrate and passive SMD so that initially said
flux material is activated to prepare said electrical contacts for solder wetting
and then said solder mounds melt and reflow to bond said electrical contacts
15 and said resin encapsulant is cured.
2. The method as set forth in Claim 1 wherein said step of applying heat
comprises applying heat at a ramp rate between about 1.4°C/sec. and about
2°C/sec. up to the melting point of said solder mounds and then maintaining a
temperature above the said melting point of said solder mounds for more than
20 90 sec.

3. The method as set forth in Claim 2 wherein said temperature is maintained above the said melting point of said solder mounds for at least 180 sec.
4. The method as set forth in Claim 2 wherein said melting point is about
5 183°C.
5. The method as set forth in Claim 4 wherein said ramp rate is about 1.70°C/sec.
6. The method as set forth in Claim 5 wherein the temperature maintained above the said melting point of said solder mounds peaks at about 230°C.
- 10 7. The method as set forth in Claim 6 wherein said step of dispensing noflow resin encapsulant between said solder mounds comprises dispensing an amount so as to form a mound of encapsulant to cover the highest point of each of said solder mounds.
8. The method as set forth in Claim 7 wherein passive SMD is a capacitor
15 device.
9. The method as set forth in Claim 8 wherein said substrate is a laminate.
10. The method as set forth in Claim 9 wherein said solder mounds comprise 63%Sn/37%Pb.

11. A method of assembling an SMD on a substrate, comprising:
- forming a solder mound on each of at least a pair of electrical contacts on a substrate so as to form at least a pair of solder mounds;
 - dispensing a noflow liquid encapsulant including both flux material and resin underfill encapsulant onto said substrate in the space between said at least a pair of solder mounds in sufficient quantity so as to form a mound of encapsulant which partially covers said solder mounds;
 - pressing a passive SMD having at least a pair of electrical contacts into said mound of encapsulant so that respective ones of said at least a pair of electrical contacts of said passive SMD made contact with said at least a pair of solder mounds;
 - applying heat to said substrate and passive SMD so that said flux material is initially activated to prepare said electrical contacts for solder wetting; and
 - applying further heat to said substrate and passive SMD to melt and reflow said solder bumps so as to bond to said contacts and cause said resin encapsulant to form solid fillets around said SMD contacts and reflowed solder and fill the space between said SMD and substrate.
12. The method as set forth in Claim 11 wherein said steps of applying heat comprise applying heat at a ramp rate of between about 1.4°C/sec. and about 2°C/sec. up to the melting point of said solder mounds and then maintaining a temperature above the said melting point of said solder mounds for more than 90 sec.

13. The method as set forth in Claim 12 wherein said temperature is maintained above the said melting point of said solder mounds for at least 180 sec.

14. The method as set forth in Claim 12 wherein said melting point is about
5 183°C.

15. The method as set forth in Claim 14 wherein said ramp rate is about 1.70°C/sec.

16. The method as set forth in Claim 12 wherein steps of dispensing said noflow liquid encapsulant to form a mound of encapsulant comprises
10 dispensing said encapsulant in a quantity to form a mound higher than said solder mounds so as to cover at least a half of each of said solder mounds.

17. The method as set forth in Claim 13 wherein said SMD is a capacitor device.

18. An electronic package, comprising:
15 a substrate having at least two electrical contacts thereon; and
a passive SMD having at least two electrical contacts respectively bonded by a solder connection to the said at least two electrical contacts on said substrate, said passive SMD encapsulated by a resin such that the space

between said passive SMD and said substrate is filled with said resin and said resin forms fillets around said passive SMD solder connection.

19. The package as set forth in Claim 18 wherein said passive SMD is a capacitor device having two electrical contacts with each contact having more than one contact surface and with the said solder connection for each electrical
5 contact in contact with more than one contact surface.

20. The package as set forth in Claim 19 wherein said resin is formed from an epoxy-based flux encapsulant with flux combined into a one part epoxy system.

10